STATE OF SOUTH DAKOTA

FOREST HEALTH HIGHLIGHTS 2018

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GENERAL OVERVIEW:

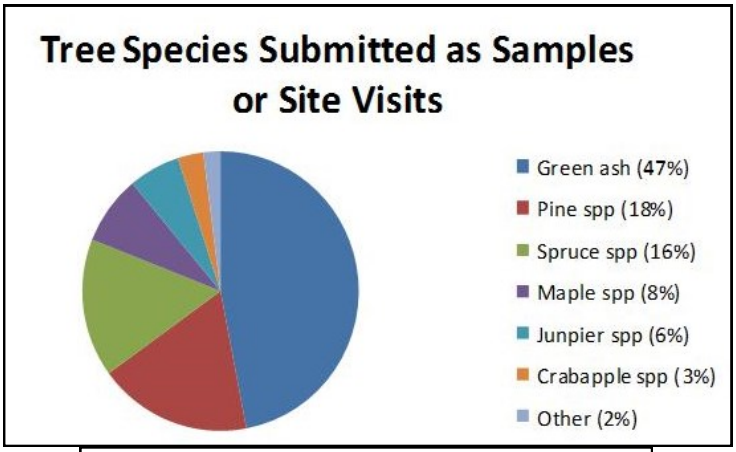
The most common tree species from which samples were submitted (either by mail or as pictures sent by email or text) or inspected during site visits was green ash *(Fraxinus pennsylvanica)* (47%). Green ash is one of the most common trees in South Dakota community forests and windbreaks. The discovery of emerald ash borer in Sioux Falls this past spring increased awareness and concern regarding the insect so more tree owners were looking for symptoms and signs of emerald ash borer infestations in their ash trees.

Most of these samples came from the Sioux Falls area, but samples came from throughout the state. The most common insect identified by site visits to these trees was either the banded or redheaded ash borer, followed by the clearwing ash borer and the ash bark beetle. No emerald ash borers were identified in any trees that tree owners or tree services thought were infested. Approximately 6% of the trees thought to be infested were not even ash. The most common tree thought to be an ash was boxelder *(Acer negundo)*, followed by black walnut *(Juglans nigra)*.

Pine - Austrian *(Pinus nigra)*, ponderosa *(P. ponderosa),* and Scotch *(P. sylvestris)* - was the second most common genera for diagnosis (18%). Austrian and Scotch pine are common trees in windbreaks throughout the southern half of the state and are planted in communities through the state. Ponderosa pine is native to the Black Hills and adjacent regions to the north and east. It is also a common windbreak and community tree through the state. The most common pests associated with these trees was Zimmerman pine moth and pine wilt disease on the Austrian and Scotch pines, and either diplodia tip blight, dothistroma needle blight, or pine engraver beetle on ponderosa pine samples.

Spruce was the third most common genera submitted for diagnosis (16%). Most of these samples were from Colorado spruce *(Picea pungens),* followed by white spruce *(P. glauca)*. Colorado spruce is common to communities and windbreaks throughout the state. White spruce, commonly referred to as Black Hills spruce, is also planted throughout the state and is native to the Black Hills. The most common pests diagnosed were cyptospora canker, spruce needlecast diseases, and spruce needleminer.

Other tree genera submitted as samples were maples *(Acer)* (8%), juniper *(Juniperus)* (6%), crabapple *(Malus)* (3%).



Pie graph showing the percentage of trees submitted by species during FY2018.

CONFIRMED INSECTS & MITES

BY SAMPLES SUBMITTED OR PHOTOS VIA EMAIL OR TEXT

- Apple maggot *(Rhagoletis pomonella)*
- Ash/lilac borer *(Podosesia syringae)*
- Ash bark beetle *(Hylesinus spp)*
- Ash grey blister beetle *(Epicauta fabricii)*
- Ash plant bug *(Tropidosteptes amoenus)*
- Ash seed weevils *(Lignyodes bischoffi)*
- Banded elm bark beetle *(Scolytus chevyrewi)*
- Banded ash borer *(Neoclytus caprea)*
- Boxelder bug *(Boisea trivittata)*
- Bronze birch borer *(Agrilus anxius)*
- Butternut woollyworm *(Eriocampa juglandis)*
- Carpenterworm *(Prionoxystus robiniae)*
- Chokecherry midge *(Contarina virginianae)*
- Codling moth *(Cydia pomonella)*
- Cotoneaster leaf crumpler *(Acrobasis indigenella)*
- Cottonwood borer *(Plectrodera scalator)*
- Cottonwood leaf beetle *(Chrysomela scripta)*
- Cottony ash psyllid *(Psyllopsis disrcepans)*
- Dogwood sawfly *(Macremphytus tarsatus)*
- Dusky birch sawfly *(Croesus latitarsus),*
- Eastern tent caterpillar *(Malacosoma Americanum)*, the western tent caterpillar *(M. californicum)* and the forest tent caterpillar *(M. disstria)*
- Elm sawfly *(Cimbex americana)*
- Emerald ash borer *(Agrilus planipennis)*
- Fall webworm *(Hyphantria cunea)*
- Fall cankerworm *(Alsophila pometaria)*
- Flatheaded appletree borer *(Chrysobothris femorata)*
- Fruittree leaf roller *(Archips argyospila)*
- Hackberry nipple gall maker *(Pachypsylla celtidismamma)*
- Honeylocust pod midge *(Dasineura gleditschiae)*
- Japanese beetle *(Popillia japonica)*
- Lecanium soft scales *(Parthenolecanium)*
- Maple bladder gall mite *(Vasates quadripedes)*
- Metallic wood-borer *(Buprestis confluenta)*
- Mourningcloak butterfly *(Nymphalis antiopa)*
- Northern ash sphinx *(Sphinx chersis)*
- Pear slug *(Caliroa cerasi)*
- Pine engraver beetle *(Ips pini)**
- Pine leaf adelgid *(Pineus pinifoliae)*
- Plum curculio *(Conotrachelus nenuphar)*
- Poplar borer *(Sapera calcarata)*
- Poplar vagabond aphid *(Mordvilkoja vagabunda)*
- Spotted wing drosophila *(Drosophila suzukii)*
- Spruce bud scale *(Physokermes piceae)*
- Spruce needleminer *(Endothenia albolineana)*
- Turpentine beetle *(Dendroctonus valens)**
- Twolined chestnut borer *(Agrilus bilneatus)*
- Velvet erineum gall mite *(Aceria aceris)*
- Willow sawfly *(Nematus ventralis)*
- Zimmerman pine moth *(Dioryctria spp)*

**Although calls were responded to regarding mountain pine beetle (Dendroctonus ponderosae), this insect was nearly undetectable this year. Calls were typically pine engraver or turpentine beetles.*

Spiny-elm caterpillar (mourningcloak butterfly) feeding on hackberry leaves. (Dr. Ball Pest Update, July 5, 2017; Vol. 15, no. 21)

Confirmed Diseases

By samples submitted or photos via email or text

- Apple scab *(Venturia inaequalis)*
- Ash anthracnose *(Plagiostoma fraxini)*
- Ash rust *(Puccinia sparganioides)*
- Bacterial blight of lilac *(Pseudomonas syringae pv. syringae)*
- Black knot *(Apiosporina morbosa)*
- Bur oak blight *(Tubakia iowensisi)*
- Cedar-apple rust *(Gymnosporangium juniperivirginianae)*, cedar-hawthorn rust *(G. globosum)*, and cedar-quince rust *(G. clavipes)*
- Cereal rust fungus *(Puccinia coronata)*
- Coral nectria canker *(Nectria cinnabarina)*
- Diplodia tip blight *(Diplodia pinea)*
- Dothistroma needle blight *(Dothistroma pini)*
- Dutch elm disease *(Ophiostoma novo-ulmi)*
- Fireblight *(Erwinia amylovora)*
- Guignardia blotch *(Guignardia aesculi)*
- Juniper broom rust *(Gymnosporangium nidus-avis)*.
- Kabatina twig blight *(Kabatina juniperi)*
- Marssonina blight *(Marssonina populi)*
- Peach leaf curl *(Taphrina deformans)*
- Phomopsis twig blight *(Phomopsis juniperovora)*
- Plum pockets *(Taphrina communis)*
- Tar spot *(Rhytisma acerinum)*
- Spruce needlecast *(Stigmina lautii* and *Rhizosphaera kalkhoffii)*
- Sycamore anthracnose *(Apiognomonia veneta)*
- Valsa (cytospora) canker *(Valsa kunzei)*
- Walnut anthracnose *(Ophignomonia leptostyla)*
- Willow scab *(Venturia saliciperda)*

Sample photos submitted, with follow-up site visits

- Chlorosis (*Acer rubrum, Betula nigra* and *Quercus palustris*)
- Hail damage (numerous species)
- Winter- burn (*Abies, Taxus* and *Thuja*)

Hail damage on ponderosa pine near Piedmont, SD from a storm in 2018. (Anthony Seidl, 2018)

Woody Plant Identification

- Common chokecherry *(Prunus virginiana)*
- Common buckthorn *(Rhamnus cathartica)*
- Green ash *(Fraxinus pennsylvanica)*
- Tatarian honeysuckle *(Lonicera tatarica)*

HIGHLIGHTED INSECT CONDITIONS: BORERS

EMERALD ASH BORER *(AGRILUS PLANIPENNIS)*

Emerald ash borer was confirmed in Sioux Falls this past spring. A mature ash tree was being pruned for clearance away from a building. The arborist made a tear cut on a limb which exposed galleries and a larva once the sapwood was exposed. The possible find of emerald ash was reported to Dr. John Ball, and he visited the site within an hour. Larvae were collected from the site and submitted to APHIS for confirmation. The larvae were confirmed as emerald ash borer within three days of submission.

A walking survey of the area was made the following week to identify any ash trees that were presenting symptoms of being infested by the emerald ash borer. The most common symptoms presented were woodpecker pecks within the limbs in the upper canopy of mature trees. Many of these trees also had patches – often several feet long – of bark that was removed by woodpecker activity, a symptom referred to as blonding. The trees were beginning to leaf out and many of the trees with extensive woodpecker activity also had some minor dieback and areas of the canopy with leaves that were smaller than normal.

RCF Foresters and interns survey the area of EAB infested trees in Sioux Falls, SD (SDDA, June 2018)

Over 250 infested trees were identified within a mile area surrounding the initial find. Most were in the north side of Sioux Falls. The infestation appears to be recent – perhaps 3 or 4 years old – and concentrated within about a 1 square mile area. Most were concentrated within the core, but there were two satellite areas within ¼ mile of the core.

Branch sampling was conducted in trees within this core area that were presenting symptoms. The sampling was performed from an aerial lift and followed the procedure developed by the Canadian Forest Service. Two branches, about 3 to 6 inches in diameter, were selected mid-canopy and in a sun-lite portion of the crown. The branches were pruned off at their base and thrown to the ground. The lower two feet of these branches were stripped of their bark. The branch sampling easily revealed emerald ash borers and their galleries. Every branch sample had signs of being infested, e.g. galleries or insects, though on many of these trees the only symptoms were scattered blonding in the upper canopies and woodpecker pecks.

A survey of street and park trees was conducted during late May. City blocks were randomly selected through a numbered grid system. A walking survey of the ash was conducted on the selected blocks. Trees with possible symptoms of an emerald ash borer infestation – blonding, woodpecker pecks, suckering – were noted on the survey. These trees were inspected from an aerial lift and branches were sampled. We were not able to find any signs of an infestation. No galleries or emerald ash borers were detected in any tree.

Blonding caused by woodpecker activity on an EAB infested tree in Sioux Falls, SD (SDDA, June 2018)

Purple panel traps were installed at the end of May. The core that includes the satellites was identified as our exclusionary zone (highlighted by the dashed lines) where trapping was no longer necessary, though four traps were placed in infested trees as a check to determine whether the traps would catch the adults. During the first week of June – when black locust trees were beginning to flower – the adults began to emerge.

A systematic grid of panel traps was established outside of this zone extending out about a mile with eight traps placed per square mile where ash trees are accessible. This required about 32 panel traps. These were checked weekly during the flight period.

The only emerald ash borer adults caught in the traps were the four placed in the infested trees within the core area.

Public outreach efforts

Public meetings were held in the Sioux Falls area beginning in early June. Nine meeting have been held by the end of September. Ash tree owners were told that if they lived within 15 miles of the northern part of Sioux Falls, they did not need to have anyone come out to inspect their ash trees. They could assume that their tree would become infested soon – within 2 to 10 years – or might even already be infested. If they were within this area the public was told to either plan on removing their ash tree or begin treatments by hiring a commercial applicator.

Dr. John Ball presenting at an EAB workshop for the public in Sioux Falls, SD (SDDA, May 2018)

Since the insect was discovered near the beginning of emergence, there was a ban on the removal and pruning of ash within Sioux Falls until after Labor Day, the time when adults would no longer be emerging.

A quarantine was established in late May for Minnehaha County, the northern half of Lincoln County and the northeastern corner of Turner County. Any ash – tree, log, wood – cannot be moved out of these areas.

Commercial outreach efforts

There were three injection workshops held in Sioux Falls during May and June. Product distributors were given an opportunity to discuss their line of injection equipment and products. The workshops were well attended as most of the companies were lawn care companies and had not been involved in tree care. This was an opportunity to learn how to treat ash trees by trunk injection. The city of Sioux Falls was not allowing any soil treatments for emerald ash borer. The only approved method for licensed companies was trunk injection.

The influx of companies providing injection is resulting in some misapplications – made a couple of feet high rather than at the flare and we have had some problems with other trees, walnut and hackberry, being misidentified as ash.

EMERALD ASH BORER *(AGRILUS PLANIPENNIS)*

Street tree inventory

Sioux Falls had an inventory of all their park trees, but not their street trees. We began a street tree inventory with the assistance of Master Gardeners and GPS units provided by the Division.

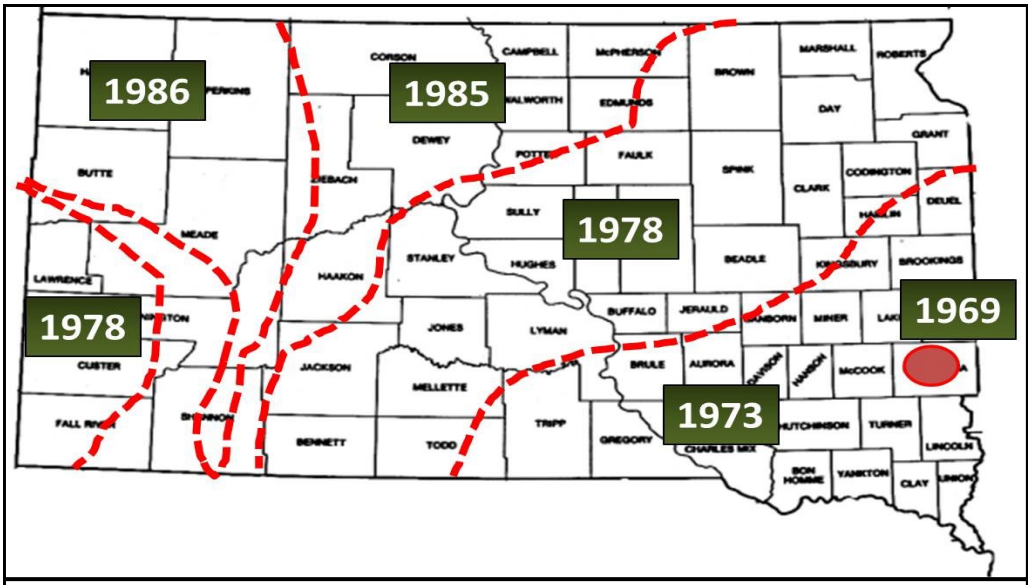
The state has had great success in using these volunteers in collecting street tree inventory data in other communities. During the past six weeks, the volunteers have inventoried about 5,000 trees, about 15% of the estimated street tree population. Approximately 36% of the street trees are ash, while another 31% are maple. The third highest is linden at 5%. The inventory efforts will continue in 2019. The estimated total population of ash trees in the city, counting public and private, is 85,000.

Possible spread pattern of emerald ash borer across the state

There is considerable interest in the potential long-distance spread pattern to emerald ash borer across the state. Since this depends on anthropogenic variables, e.g. raw ash wood movement, it is difficult to predict. However, a look at the historic spread of Dutch elm disease across the state may provide a guide. While Dutch elm disease is a pathogen, and emerald ash borer an insect, Dutch elm disease depends on raw wood and beetles for long distance spread. The insects can travel on infested firewood much as emerald ash borer does.

Interestingly both Dutch elm disease and emerald ash borer were first confirmed in Sioux Falls. Dutch elm disease spread out from Minnehaha County and it reached most of southeastern South Dakota within five years. It spread across all East River and parts of West River within 10 years. The disease showed up in the Black Hills sooner than some other western locations since this is a popular camping spot and campers carry firewood. The last county to have Dutch elm disease confirmed was Harding County in 1986.

While the spread of Dutch elm disease may differ from emerald ash borer, this map may be a reasonable pattern for the loss of our ash across the state.



A map depicting the spread of Dutch elm disease across South Dakota. (Dr. John Ball, January 2019)

VELVET LONGHORNED BEETLE *(TRICHOFERUS CAMPESTRIS)*

Earlier this spring an adult beetle emerged from a new walnut table and the owner sent some pictures of the holes coming from the table and the adult beetle. It appears to be the velvet longhorned beetle *(Trichoferus campestris)* and after adult specimens were collected and sent on through APHIS it was confirmed as the adult. A visit to the local saw mill permitted examination of the some of the logs from which the table was constructed and larvae were collected from this material.

During late August, another suspicious larva was found in an air-dried walnut board in Sioux Falls. The tree was harvested in Minnesota this spring, cut into boards, air-dried and shipped to South Dakota. We collected larvae and wood samples and these were sent through APHIS for identification. We have not received further information at this time.

The velvet longhorned beetle is a wood boring insect from East Asia, native to China, Korea and Russia. It was first detected in North America in Quebec (2002) and since then in 14 states including Colorado (2013) and Minnesota (2010). The insect is typically detected in traps and in warehouses, not trees, but it is established in fruit orchards in Utah.

The larval stage of the insect can continue developing in raw timber and even dry wood. The preferred living host is apple/crabapple *(Malus)* and peaches *(Prunus)*. But it has been found in birch *(Betula),* honeylocust *(Gleditsia),* mulberry *(Morus),* pine *(Pinus),* spruce *(Picea),* walnut *(Juglans),* and willow *(Salix)*. Infested trees usually present with declining canopies and epicormic shoots. There will also be pencil size oval holes on the trunk and frass (sawdust-like pellets) at the base of the tree. Finding these symptoms and signs does not positively identify the tree as infested by the velvet longhorned beetle as infestations by our native longhorned beetle will present the same.

This insect has the potential to be a significant pest in apple and peach orchards. It also can become a structural problem in rustic furniture, any wood product with some bark retained on the edge. The insect has been known to live 18 months in furniture before emerging.

HIGHLIGHTED INSECT CONDITIONS: DEFOLIATORS

ASH PLANT BUG *(TROPIDOSTEPTES AMOENUS)*

Ash plant bugs and other plant bugs seem to be more of a problem this year than in the past decade. Plant bugs, both the nymphs and adults, insert their piercing-sucking mouthparts into the leaf and secrete a toxic substance into the tissue while pulling chlorophyll out of the tissue. This injury results in white to brownish black dots referred to as stippling. Usually the extent of the injury is just a few random light-colored dots on the leaves, but high populations of plant bugs can result in the leaves curling and turning brown before falling prematurely.

There is more than one ash plant bug, *T. amoenus*, which is the species native to eastern US, and *T. ilitus* and *T. pacificus* are native to the western US. The widespread shipping of ash trees back and forth across this country has mixed these populations but the dominant one is *T. amoenus*. This insect has two generations per year and that seems to be the situation here in South Dakota where we saw a large population of nymphs in late May and another peak in late August. The insect overwinters as eggs which hatch as the leaves begin to expand. The nymphs move out onto this tender foliage to suck sap from the undersides of the leaves. They feed for about five weeks before becoming adults.

These adults lay eggs in late July which hatch in early August with the second generation of nymphs feeding during August. The adults, which also suck sap from the leaves, lay eggs and continue feeding until they are killed by the frost.

BUTTERNUT WOOLLYWORM *(ERIOCAMPA JUGLANDIS)*

Butternut woollyworm was found defoliating black walnuts in several areas of the state. The adult sawfly is a small wasp-like insect that lays in eggs along the leaflet margins in early summer. Once the eggs hatch, the larvae feed on the leaflets until late summer when they drop to the ground to pupate before emerging the following spring.

The populations fluctuate from year to year so finding them this year is not a good predictor that they will be found on the same trees next year. They also do not usually cause enough defoliation to be a concern.

DOGWOOD SAWFLY *(MACREMPHYTUS TARSATUS)*

Dogwood sawfly resulted in defoliation of redosier dogwoods in the eastern half of the state. They have almost completely defoliated some shrub beds. There are two generations per year with the second generation (appearing in August) causing the most defoliation.

FRUITTREE LEAF ROLLER *(ARCHIPS ARGYOSPILA)*

Fruittree leaf roller is becoming a serious defoliator of the birchleaf spirea *(Spiraea betulifolia)*, a shrub that is becoming a popular ornamental and a replacement for other spireas.

The fruittree leaf roller infests a wide range of hosts from ash to willow but seems to really like birchleaf spirea (as well as apple trees). While the fruittree leaf roller causes much of this damage in South Dakota, a similar appearing insect, the obliquebanded leaf roller *(Chorisoneura roseaceana)*, can also roll the leaves of spirea.

DUSKY BIRCH SAWFLY *(CROESUS LATITARSUS)*

Dusky birch sawfly is an occasional pest of birch, especially river birch. Dusky birch sawfly has two generations per year and the second generation larvae will feed for a week or two in late summer before dropping to the soil to overwinter as pre-pupae. The adults will emerge from the soil next spring to lay eggs along the margins of the newly unfolded leaves.

The reports came from the central and eastern part of the state and there were only a few trees that had significant defoliation.

Pear slug feeding on a leaf. (Dr. John Ball, Pest Update, Sep. 19, 2018; Vol. 16 no. 32)

PEAR SLUGS *(CALIROA CERASI)*

Pear slugs defoliation was higher than average this year. Pear sawfly is also known as pear slug because of the slimy appearance to the larvae. The olive-green larvae are the damaging stage and feed on the leaves of pears (hence the name) as well as cherries and even an occasional plum or apple. They feed on only one surface of the leaf, a type of damage known as a window-pane. The damage is usually not severe enough to warrant treatments.

There are two generations per year of this insect. The adults emerge in the spring from cocoons in the soil. The adults are a non-stinging wasp about 3/16-inch long. The adult female cuts slits in the edge of the leaves with her saw-like ovipositor with the eggs hatching within two weeks. The young larvae move out and feed on the upper surface of the leaves for about a month before dropping to the soil and forming cocoons. The second-generation adults emerge in early July to start the life cycle over again. The second-generation larvae cause the most defoliation.

Highlighted Disease Conditions: Foliage Diseases

Guignardia leaf blotch *(Guignardia aesculi)*

Guignardia leaf blotch is appearing on buckeyes in the state. This is a common disease of horsechestnut (but we have few of these trees) and can also occur on buckeyes. The disease first appears as small water-soaked blotches in the leaves. These quickly develop into reddish-brown spots with a yellow margin. Eventually the blotches expand and coalesce. The entire leaf may become one big blotch and these infected leaves curl, become dry and brittle and fall prematurely.

The browning and curling – the final symptoms – may be confused with scorching. This environmental problem, the result of drying summer winds, is usually concentrated on the south side of the tree while Guignardia blotch will be throughout the tree.

Guignardia leaf blotch on an Ohio buckeye leaf. (Dr. John Ball, Pest Update, Jul. 18,2018; Vol. 16, no. 23)

Guignardia leaf blotch is common on Ohio buckeye *(Aesculus glabra)*, but not on the two common hybrids planted in the state, 'Autumn Splendor' and the 'Homestead' buckeyes. These two trees are noted for their attractive spring flowers, sparse nut production, and autumn foliage color. The lack of leaf blotch is just another reason to plant these hybrids rather than the species.

Bur oak blight *(Tubakia iowensis)*

Bur oak blight *(Tubakia iowensis)* disease reports typically occurr in late summer. This disease was first noticed on bur oaks in southern Minnesota, Iowa and eastern Nebraska back in the 1990s where it became associated with declining bur oak *(Quercus macrocarpa)*. It has been reported in most of the South Dakota counties bordering Minnesota and Iowa. The disease is more prevalent on the bur oak botanical variety *Q. macrocarpa var. oliviformis* which is more common to dry, upland sites. This variety produces slightly smaller acorns than most other bur oaks. This botanical variety is found in woody draws and along rolling hills of eastern South Dakota and includes the draws that are incorporated into Sioux Falls. There are many land-owners in this community that are treating their oaks.

Highlighted Disease Conditions: Wilts

Dutch elm disease *(Ophistoma novi-ulmi)*

Dutch elm disease reports were low during 2018. Communities with a significant elm population, more than 10% of their street tree population, are becoming fewer and even in these communities the elms are spread out enough to limit root graft infections. The American elm population continues to decline due to disease (Dutch elm disease and veticillium wilt), storms, and construction. While American elm is still one of the most common community trees in the state, comprising more than 5% of the total street tree population, this is a drop from more than 10% two decades ago. There are some new street plantings of Princeton elm *(Ulmus americana 'Princeton')*, but most of the elms being planted are Accolade *(U. x 'Morton')*, Discovery *(U. davidiana var. japonica 'Discovery')* and Triumph *(U. x 'Morton Glossy').*

PINEWOOD NEMATODE *(BURSAPHELENCHUS XYLOPHILUS)*

Pinewood nematode is native to North America and feeds on the living cells surrounding the resin canals in the sapwood and blue stain fungi within pine. In a native host, such as ponderosa pines, the nematode does little harm, but in an exotic pine such as Scotch *(P. sylvestris)* or Austrian *(P. nigra)* pine, it becomes a killer. The nematode and perhaps a bacterial associate, colonizes the vascular system, restricting water transport and causing a wilt disease known as pine wilt. The disease usually kills a tree the same season symptoms appear.

Pine wilt disease was first noted in Missouri in 1979, at first it was thought to be an exotic threat but when the disease was only observed on exotic pines, not the native, the thought turned to the nematode begin native. The disease was soon found in the much of the Midwest from Michigan to Nebraska. It was first noted in South Dakota in the Lake Andes-Yankton area during the mid-1980s.

The occurrence of pine wilt disease is associated with dry and warm summer (a mean temperature above 70oF). If the summers are not warm enough, the disease does not appear despite the appearance of the nematode. South Dakota summers have been warmer in the past decade and this has permitted the disease to advance north. It was once restricted to the southern tier of counties, then I-90, then Hwy 14 and now Hwy 212. While we have not confirmed the disease in the northern third of the state, it is likely only a matter of time.

Pines usually die the same year that symptoms appear though occasionally death is delayed until the weather warms the following spring. When the dead tree is felled, the stump will have blue stain in the sapwood. Logs from infested trees are very light as the wood has also dried due to the plugging of the vascular system.

The disease is carried by sawyer beetles *(Monochamus)* from an infected tree to a healthy host, usually through the maturation feeding by the newly emerged beetle. The nematode may be transported to drought-stressed pines during oviposition by the beetles as they are attracted to stressed trees.

The management of this disease is prompt removal and disposal of the dead, infested trees. This should be done from autumn through early spring. We look at April 1 being the finish date as after that time the longhorned beetles emerge and can carry the nematode to nearby healthy trees. The disease does not move quickly through a group of trees or windbreak. Some trees may carry a small population of nematodes for a year or two before the population expands and the tree presents symptoms. It can take a decade or more before the entire belt dies from the disease.

Scotch pine killed by pine wilt disease on a golf course in Rapid City. (SDDA, 2017)

Forest Health Conditions with Other Damaging Agents

Hail

A hail storm moved through the Black Hills and east into the plains during the past summer. The storm resulted in mechanical damage to many trees within its path. There has also been an increase in pines presenting diplodia tip blight symptoms within the path.

Hail damage on ponderosa pine in the Black Hills near Piedmont, SD (SDDA, 2018)

Herbicide

There have been numerous reports of herbicide injury to windbreak trees and shrubs adjacent to soybean fields. The typical symptoms were leaf cupping, curling and abnormal elongation of the leaf. The foliage analysis of these plants showed a dicamba concentration of 6 to 70 ppb.

Tornado

On Friday, June 29th, a tornado touched down in the Northwestern corner of the Black Hills. It started near the Wyoming border, not far from the area known as Cement Ridge, and continued South and East until it hit Spearfish Canyon. The tornado tracked nearly 20 miles and destroyed acres of ponderosa pine, Black Hills spruce, aspen, and birch stands on both public and private land.

Following the storm salvage harvesting operations were completed to remove much of the ponderosa pine blown down during the storm that was marketable and accessible. Other areas were opened up for free fire permits to the public to help reduce the down woody material that was less suitable for timber harvest.

Although tornadoes are not common in the Black Hills, they have also been confirmed in recent years near Hill City, SD, and near Pactola reservoir. However, this most recent tornado was far more destructive.

Area near Tinton, SD hit hard by the June 29th tornado. (SDDA, 2018)

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ANNUAL INSECT & DISEASE TRAINING

The Division of Resource Conservation & Forestry's strategic plan requires one insect and disease training be held annually for division personnel to improve diagnoses of common problems of trees in South Dakota. These trainings are also open to other agencies and individuals looking to expand their knowledge of tree insect and diseases. This year's training was held in Brookings on June 5th & 6th, 2018. The training was attended by all field foresters for the division, staff, and forestry interns. Dr. Ball presented on the most common insect, disease, and other damaging agents of trees. Other topics included soil health and tree species suitable for South Dakota plantings.

Forestry intern, Nathanael Burkhardt, hangs a purple prism trap for EAB during I & D training.

The second day of the training included a field portion walking around the area in Sioux Falls where emerald ash borer was first confirmed only a month earlier. Purple prism traps were inspected for adult catches, and some adults were found during emergence.

Jeri Lyn Harris

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https://www.fs.fed.us/foresthealth/protecting-forest/forest-health-monitoring/index.shtml

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